Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A system for handling transport protocol segments, comprising:

a sender that adapts a transport protocol segment,

wherein the transport protocol segment comprises a self-describing header and an indicator,

wherein the self-describing header is not part of a transport protocol header or a network protocol header of the transport protocol segment, and

wherein the indicator is used to locate the self-describing header in the transport protocol segment ~~indicates at least one of a presence and a location of the self-describing header~~.

2. (Original) The system according to claim 1,

wherein the sender can identify a sender upper layer protocol (ULP) message boundary, and

wherein the sender can use the identified ULP message boundary to encapsulate information into self-describing transport protocol segments.

3. (Original) The system according to claim 1,

wherein the transport protocol comprises a transmission control protocol (TCP), and

wherein the transport protocol segment comprises a TCP segment.

4. (Original) The system according to claim 3, wherein the indicator resides in an options field of a TCP header of the TCP segment.

5. (Original) The system according to claim 4, wherein the indicator is an option in the

options field.

6. (Original) The system according to claim 3, wherein the indicator resides in a reserved field of a TCP header of the TCP segment.

7. (Original) The system according to claim 6, wherein the indicator uses one or more reserved bits of the reserved field.

8. (Original) The system according to claim 3, wherein the indicator resides in a field residing in a TCP payload of the TCP segment.

9. (Original) The system according to claim 3, wherein the self-describing header comprises control information used to place data information in the TCP segment.

10. (Original) The system according to claim 9, wherein the control information is used to delineate boundaries of a ULP payload of the TCP segment.

11. (Original) The system according to claim 9, wherein the self-describing header comprises information that is used to ensure correctness of at least one of the control information and a payload.

12. (Original) The system according to claim 9, wherein the control information comprises at least one of a buffer location, an error detection code and an error correction code.

13. (Original) The system according to claim 12, wherein the buffer location comprises an upper layer protocol (ULP) buffer location.

14. (Original) The system according to claim 1, wherein the transport protocol segment is part of at least one of a byte stream and chunks.

15. (Original) The system according to claim 14, wherein each transport protocol segment of the byte stream is self describing.

16. (Currently Amended) A system for handling transport protocol segments, comprising:

a receiver adapted to process a transport protocol segment that has been resegmented by an intermediate network device in a communication pathway between the receiver and a sender,

wherein the transport protocol segment received by the receiver is a different size than the transport protocol segment sent by the sender,

wherein the receiver is unaware of the received transport protocol segment has been resegmented by the intermediate network device,

wherein the transport protocol segment comprises a self-describing header and an indicator, the self-describing header not being part of a transport protocol header of the transport protocol segment,

wherein a position of the self-describing header has changed in the transport protocol segment due to the intermediate network device resegmenting the transport protocol segment, and

wherein the receiver uses the indicator ~~indicates at least one of a presence and a location~~ to locate the position of the self-describing header in the transport protocol segment.

17. (Original) The system according to claim 16, wherein the receiver is adapted to process the transport protocol segment in a non-flow-through manner.

18. (Original) The system according to claim 16, wherein the receiver is adapted to process the transport protocol segment in a flow-through manner.

19. (Original) The system according to claim 16,

wherein the transport protocol comprises at least one of a TCP and a stream control transmission protocol (SCTP), and

wherein the transport protocol segment comprises at least one of a TCP segment and an SCTP segment.

20. (Original) The system according to claim 19, wherein the indicator resides in an options field of a TCP header of the TCP segment.

21. (Original) The system according to claim 19, wherein the indicator resides in a reserved field of a TCP header of the TCP segment.

22. (Original) The system according to claim 19, wherein the indicator resides in a field residing in a TCP payload of the TCP segment.

23. (Original) The system according to claim 19, wherein the self-describing header comprises control information used to place data information in the TCP segment.

24. (Original) The system according to claim 16, wherein the self-describing header is disposed within at least one of a transport protocol header, a network protocol header and a payload.

25. (Original) The system according to claim 16, wherein the self-describing header is disposed between a transport protocol header and a network protocol header or after the transport protocol header.

26. (Original) The system according to claim 16, wherein the receiver uses information residing in the self-describing header to place data information in the transport protocol segment into a host memory of the receiver.

27. (Original) The system according to claim 16, wherein the receiver copies the data from an Ethernet to a location in an ULP buffer by using information stored in the self-describing header.

28. (Currently Amended) A method ~~for forming self-describing transport protocol segments,~~ comprising:

inserting a self-describing header that is not part of a transport protocol header or a network protocol header in a transport protocol segment; and

inserting an indicator that is used to indicate a position of ~~that indicates at least one of a presence and a location of~~ the self-describing header in the transport protocol segment.

29. (Currently Amended) The method according to claim 28,

wherein the transport protocol segment comprises a network protocol header and a transport protocol header, and

wherein the indicator resides in ~~at least one of an options field, a reserved field or a dedicated field~~ the network protocol header of the transport protocol segment.

30. (Currently Amended) The method according to claim 28, wherein the indicator is

inserted in ~~at least one of a transport protocol header, a network protocol header and~~ a payload of the transport protocol segment.

31. (Currently Amended) The method according to claim 28, wherein the indicator is inserted between ~~a~~ the transport protocol header and ~~a~~ the network protocol header ~~or after a transport protocol header~~.

32. (Original) The method according to claim 31, wherein the indicator is inserted in the self-describing header.

33. (Currently Amended) A method for handling out-of-order transport protocol segments in a flow-through manner, comprising:

locating an indicator residing outside of a transport protocol header in ~~a~~ an out-of-order transport protocol segment~~, the indicator indicating at least one of a presence and a location of a self-describing header~~;

locating the self-describing header by using the located indicator; and

directly placing data information stored in the out-of-order transport protocol segment in a ULP buffer or an application buffer using information residing in the self-describing header without waiting for other out-of-order transport protocol segments.

34. (Original) The method according to claim 33, further comprising:

determining control information based on information carried by the self-describing header.

35. (Original) The method according to claim 34, further comprising:

determining an error code based on the determined control information; and

error detecting or error correcting using the determined error code.

36. (Original) The method according to claim 34, further comprising:

making a placement decision based on the determined control information.

37. (Original) The method according to claim 33, wherein the self-describing header comprises a ULP buffer location or an application buffer location.